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<120> Protein Complementation In Transgenic Plants

<130> P19629US/TJF

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<141> 1999-08-20

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<150> GB 97/03681.8

<151> 1997-02-21

<160> 68

<170> PatentIn version 3.2

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<213> Plant-Unknown

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ctt cag aca tat cat aag cta cct gat aat tac att aca aaa tca gaa 98
Leu Gln Thr Tyr His Lys Leu Pro Asp Asn Tyr Ile Thr Lys Ser Glu
15 20 25 30

gca caa gcc ctc ggc tgg gtg gca tca aaa ggg aac ctt gca gac gtc 146
Ala Gln Ala Leu Gly Trp Val Ala Ser Lys Gly Asn Leu Ala Asp Val
35 40 45

gct ccg ggg aaa agc atc ggc gga gac atc ttc tca aac agg gaa ggc 194
Ala Pro Gly Lys Ser Ile Gly Gly Asp Ile Phe Ser Asn Arg Glu Gly
50 55 60

aaa ctc ccg ggc aaa agc gga cga aca tgg cgt gaa gcg gat att aac 242
Lys Leu Pro Gly Lys Ser Gly Arg Thr Trp Arg Glu Ala Asp Ile Asn
65 70 75

tat aca tca ggc ttc aga aat tca gac cgg att ctt tac tca agc gac 290
Tyr Thr Ser Gly Phe Arg Asn Ser Asp Arg Ile Leu Tyr Ser Ser Asp
80 85 90

tgg ctg att tac aaa aca acg gac cat tat cag acc ttt aca aaa atc 338
Trp Leu Ile Tyr Lys Thr Thr Asp His Tyr Gln Thr Phe Thr Lys Ile
95 100 105 110

aga taa
Arg

<210> 2
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20 25 30

Ala Leu Gly Trp Val Ala Ser Lys Gly Asn Leu Ala Asp Val Ala Pro
35 40 45

Gly Lys Ser Ile Gly Gly Asp Ile Phe Ser Asn Arg Glu Gly Lys Leu
50 55 60

Pro Gly Lys Ser Gly Arg Thr Trp Arg Glu Ala Asp Ile Asn Tyr Thr
65 70 75 80

Ser Gly Phe Arg Asn Ser Asp Arg Ile Leu Tyr Ser Ser Asp Trp Leu
85 90 95

Ile Tyr Lys Thr Thr Asp His Tyr Gln Thr Phe Thr Lys Ile Arg
100 105 110

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catggtctag agtacttg

18

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<211> 16
<212> DNA
<213> Artificial

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<400> 4
ccagccgagg gcttgt

16

<210> 5
 <211> 16
 <212> DNA
 <213> Artificial

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<400> 5
 gcatcaaaag ggaacc

16

<210> 6
 <211> 228
 <212> DNA
 <213> Artificial

<220>
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<400> 6
 cgaaaaaac ggcttcctgc ggaggccggt tttttcagct ttacataaag tgtgtaataa 60
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 gtccgagaca ggaggacatc gtccagctga aaccggggca gaatccggcc atttctgaag 180
 agaaaaatgg taaactgata gaataaaatc ataagaaagg agccgcac 228

<210> 7
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 <212> DNA
 <213> Plant-Unknown

<220>
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<400> 7
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 Met Lys Lys Ala Val Ile Asn Gly Glu Gln Ile Arg Ser Ile Ser Asp
 1 5 10 15
 ctc cac cag aca ttg aaa aag gag ctt gcc ctt ccg gaa tac tac ggt 96
 Leu His Gln Thr Leu Lys Lys Glu Leu Ala Leu Pro Glu Tyr Tyr Gly
 20 25 30
 gaa aac ctg gac gct tta tgg gat tgt ctg acc gga tgg gtg gag tac 144
 Glu Asn Leu Asp Ala Leu Trp Asp Cys Leu Thr Gly Trp Val Glu Tyr
 35 40 45
 ccg ctc gtt ttg gaa tgg agg cag ttt gaa caa agc aag cag ctg act 192
 Pro Leu Val Leu Glu Trp Arg Gln Phe Glu Gln Ser Lys Gln Leu Thr
 50 55 60
 gaa aat ggc gcc gag agt gtg ctt cag gtt ttc cgt gaa gcg aaa gcg 240
 Glu Asn Gly Ala Glu Ser Val Leu Gln Val Phe Arg Glu Ala Lys Ala
 65 70 75 80

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gaa ggc tgc gac atc acc atc ata ctt tct taa tacgatcaat gggagatgaa 293
Glu Gly Cys Asp Ile Thr Ile Ile Leu Ser 90

caatatagat cccccgggct gcaggaattc 323

<210> 8
<211> 90
<212> PRT
<213> Plant-Unknown
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Leu His Gln Thr Leu Lys Lys Glu Leu Ala Leu Pro Glu Tyr Tyr Gly
20 25 30

Glu Asn Leu Asp Ala Leu Trp Asp Cys Leu Thr Gly Trp Val Glu Tyr
35 40 45

Pro Leu Val Leu Glu Trp Arg Gln Phe Glu Gln Ser Lys Gln Leu Thr
50 55 60

Glu Asn Gly Ala Glu Ser Val Leu Gln Val Phe Arg Glu Ala Lys Ala
65 70 75 80

Glu Gly Cys Asp Ile Thr Ile Ile Leu Ser
85 90

<210> 9
<211> 21
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<213> Artificial

<220>
<223> Figure 1C: B3 Primer

<400> 9
taatacgatc aatgggagat g 21

<210> 10
<211> 194
<212> DNA
<213> Artificial

<220>
<223> Figure 1D

<220>
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1 5 10
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Leu Gln Thr Tyr His Lys Leu Pro Asp Asn Tyr Ile Thr Lys Ser Glu
15 20 25 30
gca caa gcc ctc ggc tgg atg ggc ggt ggc ggt tcc ggt ggc ggt ggc 146
Ala Gln Ala Leu Gly Trp Met Gly Gly Gly Gly Ser Gly Gly Gly Gly
35 40 45
agc ggc ggc ggt ggt agc ggc atc ccc ggc tac ggt cag tcc ctt atg 194
Ser Gly Gly Gly Gly Ser Gly Ile Pro Gly Tyr Gly Gln Ser Leu Met
50 55 60

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<213> Artificial

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<223> Figure 1D

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Thr Tyr His Lys Leu Pro Asp Asn Tyr Ile Thr Lys Ser Glu Ala Gln
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Ala Leu Gly Trp Met Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly
35 40 45
Gly Gly Gly Ser Gly Ile Pro Gly Tyr Gly Gln Ser Leu Met
50 55 60

<210> 12
<211> 526
<212> DNA
<213> Artificial

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<223> Figure 1E

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ttcctcactc aatctggatt cttctcttta gctttttgaa attcagatct cttatcattt 180
acttgtttct cttttaagga atccctccgg atcagcagag attgatcttc gccggaaagc 240
agctcgaaga tggccgtact ttggctgact acaacatcca gaaaggtagc aaatcatccg 300

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aatccttctg ttgatcattt cgatgatctg attgtataaa ctctaattgga ttgttatcat 360
 ttgtaaacag aatctacact tcatcttgtg ttgaggctta gaggtggagc acagggttattc 420
 aacacgtttg acgggggttgc ggattatctt cagacatattc ataagctacc tgataattac 480
 attacaaaat cagaagcaca agccctcggc tggatgtaga ggatcc 526

<210> 13
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 <212> DNA
 <213> Artificial

<220>
 <223> Figure 1F

<400> 13
 tctagaccat gcagatcttc gtgaaaacct tgaccggcaa gaccatcact ctcgaggtcg 60
 agagcagcga ccatcgacaa tgtcaaggcc aagatccaag acaaagaagg tatcattctt 120
 cctcactcaa tctggattct tctcttttagc tttttgaaat tcagatctct tatcatttac 180
 ttgtttctcc ttttaaggaat ccctccggat cagcagagat tgatcttcgc cggaaagcag 240
 ctcgaagatg gccgtacttt ggctgactac aacatccaga aaggtagcaa atcatccgaa 300
 tccttctggt gatcatttctg atgatctgat tgtataaact ctaatggatt gttatcattt 360
 gtaaacagaa tctacacttc atcttgtggt gaggctttaga ggtggagcat caaaagggaa 420
 ccttgagac gtcgctccgg ggaaaagcat cggcggagac atcttctcaa acagggaagg 480
 caaactcccg ggcaaaagcg gacgaacatg gcgtgaagcg gatattaact atacatcagg 540
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 ccattatcag acctttacaa aatcagata a 631

<210> 14
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 <212> DNA
 <213> Artificial

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<400> 14
 cacaagtact ctagaccatg 20

<210> 15
 <211> 19
 <212> DNA
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 <223> Figure 1G: B6

<400> 15
 catccagccg agggcttgt 19

<210> 16
<211> 16
<212> DNA
<213> Artificial

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<223> Figure 1G: B7

<400> 16
ggcgggtggcg gttccg

16

<210> 17
<211> 23
<212> DNA
<213> Artificial

<220>
<223> Figure 1G: B8

<400> 17
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23

<210> 18
<211> 18
<212> DNA
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<220>
<223> Figure 1G: B9

<400> 18
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18

<210> 19
<211> 31
<212> DNA
<213> Artificial

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31

<210> 20
<211> 16
<212> DNA
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<400> 20
gcatcaaaag ggaacc

16

<210> 21

<211> 17
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 <213> Artificial

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<400> 21
 ggtctagagt acttgtg

17

<210> 22
 <211> 30
 <212> DNA
 <213> Artificial

<220>
 <223> Figure 1G: Ubq16F

<400> 22
 gctctagacc atgcagatct tcgtgaaaac

30

<210> 23
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<400> 23
 ctggatccac ctctaagcct caaca

25

<210> 24
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 tatggatccc ccgggctgca ggaa

24

<210> 25
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<400> 25
 tccacctcta agcctcaaca c

21

<210> 26
 <211> 23
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 <400> 26
 gcggatccat gaaggagacc gcc 23
 <210> 27
 <211> 56
 <212> DNA
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 <223> Figure 3A: Lane 2
 <400> 27
 gcggatccat gaaggagacc gccgccgcca agttcgagcg ccagcacatg gacagc 56
 <210> 28
 <211> 22
 <212> DNA
 <213> Artificial
 <220>
 <223> Figure 3A: Lane 3, RN1
 <400> 28
 catagatctt tagctgtcca tg 22
 <210> 29
 <211> 28
 <212> DNA
 <213> Artificial
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 <223> Fig 3A: lane 4, Primer
 <400> 29
 ccagatctat gagctcctcc aactactg 28
 <210> 30
 <211> 63
 <212> DNA
 <213> Artificial
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 <400> 30
 taaagatcta tgagcacctc cgccgccagc tcctccaact actgcaacca gatgatgaag 60
 tct 63
 <210> 31
 <211> 21
 <212> DNA
 <213> Artificial

<220>
<223> Fig 3A: lane 6, RN2

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tcagggttcct agacttcatc a

21

<210> 32
<211> 59
<212> DNA
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<400> 32
aggaacctga ccaaggacag gtgcaagcca gtcaacacct tcgtccacga gagcctggc

59

<210> 33
<211> 19
<212> DNA
<213> Artificial

<220>
<223> Fig 3A: lane 8, RN3

<400> 33
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19

<210> 34
<211> 48
<212> DNA
<213> Artificial

<220>
<223> Fig 3A, lanes 7/9, RN IV

<400> 34
cgatgtccag gccgtctgca gccagaagaa cgtggcctgc aagaacgg

48

<210> 35
<211> 21
<212> DNA
<213> Artificial

<220>
<223> Fig 3A: lane 10, RN 4

<400> 35
agttggtctg accgttcttg c

21

<210> 36
<211> 60
<212> DNA
<213> Artificial

<220>
<223> Fig 3A: lanes 9/11, RN V

<400> 36
tcagaccaac tgctaccagt cctacagcac catgtccatc accgactgcc gcgagaccgg 60

<210> 37
<211> 19
<212> DNA
<213> Artificial

<220>
<223> Fig 3A: lane 12, RN5

<400> 37
cttgctggag ccggtctcg 19

<210> 38
<211> 55
<212> DNA
<213> Artificial

<220>
<223> Fig 3A: lanes 11/13, RN VI

<400> 38
ctccagcaag taccctaact gcgcctacaa gaccacccag gccacaagc acatc 55

<210> 39
<211> 21
<212> DNA
<213> Artificial

<220>
<223> Fig 3A: lane 14, RN 6

<400> 39
caggcaacaa tgatgtgctt g 21

<210> 40
<211> 24
<212> DNA
<213> Artificial

<220>
<223> Fig 3A: lane 15, Primer RN-b

<400> 40
cgggatcctt tagacggagg cgtc 24

<210> 41
<211> 66
<212> DNA
<213> Artificial

<220>
<223> Fig 3A: lanes 13/16, RN VII

<400> 41
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atcccg

66

<210> 42
 <211> 23
 <212> DNA
 <213> Artificial

<220>
 <223> Fig 3B: lane 1, PCR Primer RNA

<400> 42
 gcg gatccat gaaggagacc gcc 23

<210> 43
 <211> 56
 <212> DNA
 <213> Artificial

<220>
 <223> Fig 3B, lane 2, RN I

<400> 43
 gcg gatccat gaaggagacc gccgccgcca agttcgagcg ccagcacatg gacagc 56

<210> 44
 <211> 18
 <212> DNA
 <213> Artificial

<220>
 <223> Fig 3B, lane 3, RN 7

<400> 44
 ccaccgccgc tgtccatg 18

<210> 45
 <211> 57
 <212> DNA
 <213> Artificial

<220>
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<400> 45
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<210> 46
 <211> 18
 <212> DNA
 <213> Artificial

<220>
 <223> Fig 3B: lane 5, RN c

<400> 46
 cccgaagatc ttgctacc 18

<210> 47
 <211> 45
 <212> DNA
 <213> Artificial

<220>
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<400> 47
 aaagagacag cagccgcaaa gtttgagcgt cagcatatgg atagt 45

<210> 48
 <211> 32
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 <213> Artificial

<220>
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<220>
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 Met Lys Glu Thr Ala Ala Ala Lys Phe Glu Arg Gln His Met Asp Ser
 1 5 10 15

xaa Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
 20 25 30

<210> 49
 <211> 63
 <212> DNA
 <213> Artificial

<220>
 <223> Fig 4A: lane 3

<400> 49
 ggatccatga aggagaccgc cgccgccaag ttcgagcgcc agcacatgga cagctaaaga 60
 tct 63

<210> 50
 <211> 106
 <212> DNA
 <213> Artificial

<220>
 <223> Fig 4A: lane 4

<400> 50
 ggatccatga aggagaccgc cgccgccaag ttcgagcgcc agcacatgga cagcggcggt 60
 ggcggttccg gtggcggtgg cagcggcggc ggtggtagca agatct 106

<210> 51
 <211> 330
 <212> DNA
 <213> Artificial

<220>
 <223> Fig 4B: lane 1

<400> 51
 agcaccagtg ctgccagttc ttccaactac tgtaaccaga tgatgaagtc tagaaacttg 60
 accaaggaca gatgtaagcc agttaacaca tttgtccacg agagtttggc tgatgtccaa 120
 gccgtctgca gtcagaaaaa cgttgcatgc aagaacggtc aaacgaactg ttaccagagt 180
 tacagcacca tgtccatcac tgactgtcgt gagacaggct cgagcaagta tcctaattgt 240
 gcttacaaga ccacacaggc gaacaaacac atcattgttg cttgtgaagg taacccttac 300
 gttcctgtcc actttgacgc cagtgtttaa 330

<210> 52
 <211> 132
 <212> PRT
 <213> Artificial

<220>
 <223> Fig 4B: lane 2

<400> 52

Met Ser Thr Ser Ala Ala Ser Ser Ser Asn Tyr Cys Asn Gln Met Met
 1 5 10 15

Lys Ser Arg Asn Leu Thr Lys Asp Arg Cys Lys Pro Val Asn Thr Phe
 20 25 30

Val His Glu Ser Leu Ala Asp Val Gln Ala Val Cys Ser Gln Lys Asn
 35 40 45

Val Ala Cys Lys Asn Gly Gln Thr Asn Cys Tyr Gln Ser Tyr Ser Thr
 50 55 60

Met Ser Ile Thr Asp Cys Arg Glu Thr Gly Ser Ser Lys Tyr Pro Asn
 65 70 75 80

Cys Ala Tyr Lys Thr Thr Gln Ala Asn Thr Asp Cys Arg Glu Thr Gly
 85 90 95

Ser Ser Lys Tyr Pro Asn Cys Ala Tyr Lys Thr Thr Gln Ala Asn Lys
 100 105 110

His Ile Ile Val Ala Cys Glu Gly Asn Pro Tyr Val Pro Val His Phe
 115 120 125

Asp Ala Ser Val
130

<210> 53
<211> 346
<212> DNA
<213> Artificial

<220>
<223> Fig 4B, lane 3

<400> 53
agatctatga gcacctccgc cgccagctcc tccaactact gcaaccagat gatgaagtct 60
aggaacctga ccaaggacag gtgcaagcca gtcaacacct tcgtccacga gagcctggcc 120
gatgtccagg cegtctgcag ccagaagaac gtggcctgca agaacggta gaccaactgc 180
taccagtcct acagcaccat gtccatcacc gactgccgcg agaccggctc cagcaagtac 240
cctaactgcg cctacaagac caccagggcc aacaagcaca tcattgttgc ctgcgagggt 300
aacccttacg tgcctgtcca cttcgacgcc tccgtctaaa ggatcc 346

<210> 54
<211> 331
<212> DNA
<213> Artificial

<220>
<223> Fig 4B, lane 4

<400> 54
agatctatga gtcctccaa ctactgcaac cagatgatga agtctaggaa cctgaccaag 60
gacagggtgca agccagtcaa cacctccgtc cagcagagcc tggccgatgt ccaggccgtc 120
tgcagccaga agaacgtggc ctgcaagaac ggctcagacca actgctacca gtcctacagc 180
accatgtcca tcaccgactg ccgcgagacc ggctccagca agtaccctaa ctgcgcctac 240
aagaccacac aggccaacaa gcacatcatt gttgcctgcg agggtaacct ttacgtgcct 300
gtccacttcg acgcctccgt ctaaaggatc c 331

<210> 55
<211> 163
<212> DNA
<213> Artificial

<220>
<223> Fig 4C i

<400> 55
tctagatctt aacatgaaga atgttttagt aaggctcagct gcgcgagctc tgcttggcgg 60
cggtgggcgg agctactacc gccagctctc aacggcgggc atcgtggaac agagacacca 120

gcacggtggc ggcgcgtttg gaagcttcca cttaagcga tcc 163

<210> 56
 <211> 198
 <212> DNA
 <213> Artificial

<220>
 <223> Fig 4C ii

<400> 56
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 tactaccgcc agctctcaac ggcggcgatc gtggaacaga gacaccagca cgggtggcggc 120
 gcgtttggaa gcttcactt aagaaggatg aaggagaccg ccgccgcaa gttcgagcgc 180
 cagcacatgg acagctaa 198

<210> 57
 <211> 270
 <212> DNA
 <213> Artificial

<220>
 <223> Fig 4c iii

<400> 57
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 tactaccgcc agctctcaac ggcggcgatc gtggaacaga gacaccagca cgggtggcggc 120
 gcgtttggaa gcttcactt aagaaggatg aaggagaccg ccgccgcaa gttcgagcgc 180
 cagcacatgg acagcggcgg tggcggttcc ggtggcgggtg gcagcggcgg cgggtggtagc 240
 gggatccccg ggtacggtca gtcccttatg 270

<210> 58
 <211> 465
 <212> DNA
 <213> Artificial

<220>
 <223> Fig 4C iv

<400> 58
 atgaagaatg ttttagtaag gtcagctgcg cgagctctgc ttggcggcgg tgggcggagc 60
 tactaccgcc agctctcaac ggcggcgatc gtggaacaga gacaccagca cgggtggcggc 120
 gcgtttggaa gcttcactt aagaaggatg agctcctcca actactgcaa ccagatgatg 180
 aagtctagga acctgaccaa ggacaggtgc aagccagtca acacctccgt ccacgagagc 240
 ctggccgatg tccaggccgt ctgcagccag aagaacgtgg cctgcaagaa cggtcagacc 300
 aactgctacc agtcctacag caccatgtcc atcaccgact gccgcgagac cggctccagc 360
 aagtacccta actgcgctta caagaccaca caggccaaca agcacatcat tgttgccctgc 420

gagggtaacc cttacgtgcc tgtccacttc gacgcctccg tctaa

465

<210> 59
 <211> 715
 <212> DNA
 <213> Artificial

<220>
 <223> Fig 4C v

<400> 59
 atgcagatct tcgtgaaaac cttgaccggc aagaccatca ctctcgaggt cgagagcagc 60
 gacaccatcg acaatgtcaa ggccaagatc caagacaaag aaggtatcat tcttcctcac 120
 tcaatctgga ttcttctctt tagctttttg aaattcagat ctcttatcat ttacttggtt 180
 ctcttttaag gaatccctcc ggatcagcag agattgatct tcgccggaaa gcagctcgaa 240
 gatggccgta ctttggtgta ctacaacatc cagaaaggta cgaaatcatc cgaatccttc 300
 tgttgatcat ttcgatgata tgattgtata aactctaata gattgttatc atttgtaaac 360
 agaatctaca cttcatcttg tgttgaggct tagagggtgga tccagctcca actactgcaa 420
 ccagatgatg aagtctagga acctgaccaa ggacagggtc aagccagtca acacctccgt 480
 ccacgagagc ctggccgatg tccaggccgt ctgcagccag aagaacgtgg cctgcaagaa 540
 cggtcagacc aactgctacc agtcctacag caccatgtcc atcaccgact gccgcgagac 600
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